



 **ntellimeter**
Innovative Metering Solutions

**Ultrasonic Water Meter Instructions
DN15-DN40**

Important Tips

Before installing, please read this manual carefully. This manual is aimed at trained professionals; therefore, it does not include basic installation steps. If there is any change in the product model and appearance, please refer to the actual product. This specification applies equally to the casing, without affecting the functionality of the product. For details of the change, please contact Intellimeter.

- This product is a precision measuring instrument which has undergone strict testing before leaving the facility. To be operated by professional personnel only;
- This product is a precision measuring instrument, handle with care, do not drop;
- If the product does not operate normally or is in need of repair, please contact Intellimeter;
- Please do not modify the length of any cable, otherwise it will affect the performance of the product.

1 Product Introduction

1.1 Product Features

- Meter has a low starting flow rate, minimum flow rate is less than 1/3rd of a mechanical single jet or multi-jet water meter;
- Bi-directional flow measurement;
- Water temperature detection, temperature alarm;
- Alarm for abnormal water use;
- No moving parts, resulting in minimal wear to ensure long-term and stable operation;
- Can be installed at any angle, without affecting the measurement accuracy, provided that the pipes have been adequately purged;
- Ultrasonic signal quality detection;
- A 3.6V replaceable lithium-ion battery provides power to the meter with a life expectancy of 10 years;
- Magnetic induction button;
- The overall IP68 design;
- Supports M-Bus, RS485 Modbus RTU, EN13757, Infrared, Optical communication interface;
- Meets international drinking water standards;
- LCD screen can be changed by touching the magnetic switch.
- Pressure sensor is optional. This product can be equipped with a built-in pressure sensor, used to monitor pipe pressure.

1.2 Technical Parameters and Characteristics

1.2.1 Technical Specifications

Precision Class	Class 2
Standards	OIML R49, EN 14154, ISO4064
Volume Display Options	1. Net (Forward less reverse) 2. Forward only 3. Forward & reverse alternating
Temperature grade	T50 (suitable for domestic hot/cold water)
Pressure loss grade	Δp40
Power Source	3.6V Li-battery(24VDC power supply optional)
Environmental Protection	IP68 (Additional 24VDC power supply, IP65)
Ambient operation temp	5°C – 50°C
Maximum working pressure	1.6MPa – 230 PSI
Range ratio (q_p: q_i)	250:1 (80:1, 100:1, 160:1, 400:1 500:1 optional)
Data Logger	Volumes: 480 daily data; 36 monthly data;16 yearly data Alarms data: 32
Maximum flow reading (m³)	Forward: 99999.99999; reverse:-9999.99999
Electromagnetic environment level	Class E1(class E2 optional)
* remark	Battery must be in normal ambient temperature conditions. Battery lifespan depends on the frequency of data transmission and correct meter installation (display on the top).

1.2.2 Outputs

Standard Interface	Infrared, M-Bus, Modbus RS485 (optional)
Analog Output	4~20mA: The analog output shows the current measured flow rate
Digital (pulse) Output	Volume

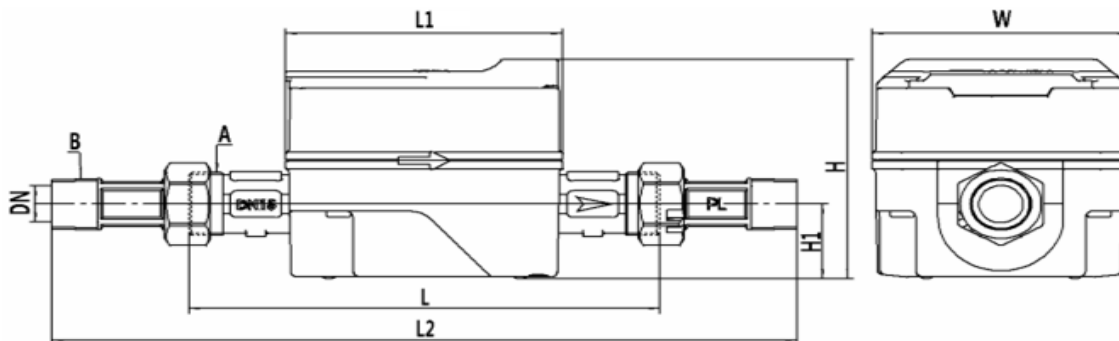
1.2.3 Flow Rate Performance Data

Nominal diameter DN mm (inches)	15 (1/2")	20 (3/4")	25 (1")	32 (1.25")	40 (1.5")
Maximum flow Q_4 (m ³ /h)	3.125	5	7.875	12.5	20
Common flow Q_3 (m ³ /h)	2.5	4.0	6.3	10.0	16.0
Boundary flux Q_2 (m ³ /h)	0.016	0.026	0.04	0.064	0.102
Minimum flow Q_1 (m ³ /h)	0.01	0.016	0.025	0.04	0.064
Pressure loss grade Δp	40	40	40	40	40

1.2.4 Dimensions


Nominal diameter DN mm (inches)	15 (1/2")	20 (3/4")	25 (1")	32 (1.25")	40 (1.5")
L(mm)	165/110 *	190/130/195 *	225/260 *	230/260 *	245/300 *
L1(mm)	97	97	97	97	97
L2(mm)	259/204	294/234/299	345/380	350/380	373/428
H(mm)	91	91	91	128	139
H1(mm)	31	28	25	29	36
W(mm)	90	90	90	90	90
Meter screw thread A (inch)	G ³ / ₄ B	G1B	G1 ¹ / ₄ B	G1 ¹ / ₂ B	G2B
Threaded for union B (inch)	R1/2 NPT	R3/4 NPT	R1 NPT	R11/4 NPT	R11/2 NPT

Note: * for the default length

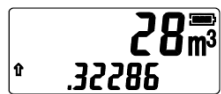


2 Liquid Crystal Display

2.1 Liquid Crystal Display Interface

- There are two modes of display: one is the standard menu display, the other is a high precision menu display;
- Switch between the standard menu and the high-precision menu by using the factory's meter reading software;
- The standard menu display is divided into a single-screen menu and ordinary menu;
- To toggle through the display menu, place the magnetic switch over the  symbol.

Standard menu-Single screen display



Positive volume flow (Default Display)

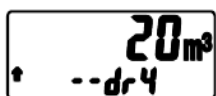


Instantaneous flow

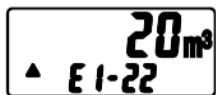


Water temperature: (Unit: °C)

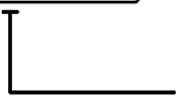
If the meter fails, the fractional part of the cumulative volume will show alarm symbols.
 When multiple errors occur, the display will cycle through error codes.



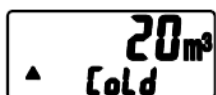
Empty pipe instruction



Transducer alarm



Channel (1, 2, 3, 4)



Low water temperature (Alarm below 4 °C)

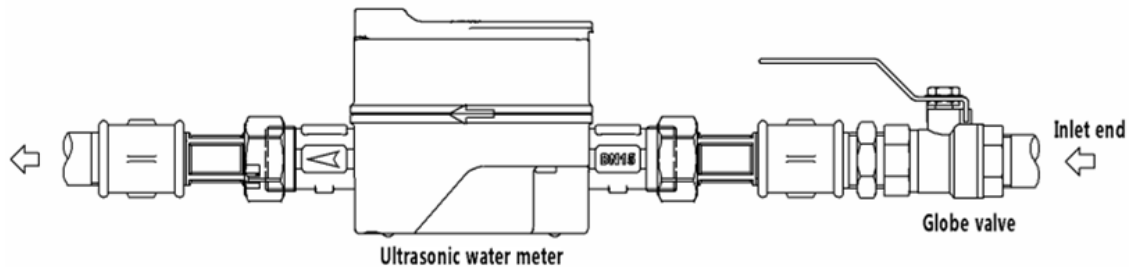
Standard menu-Normal display

High precision menu

	Positive volume flow (Default Display)
	Negative volume flow
	Instantaneous flow
	Primary address Battery voltage
	Secondary address
	Month - Day Year
	Hour - Minute Second
	Cumulative operation time Cumulative alarm time
	Main version number Flow rate revised version
	Flight time difference
	Caliber parameters Transducer signal strength
	Display test

3 Guide for Typical Installation and Maintenance

3.1 Schematic Diagram of Typical Installation



3.2 Installation Notes

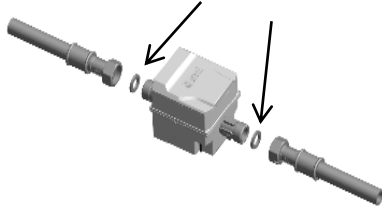
For safety reasons, please read the following points carefully:

- When installing the water meter(s) in a horizontal position, do not install the meter higher than the pipe to avoid air traps;
- When installing the water meter(s) in a vertical position, water should flow from bottom to top;
- Straight pipe requirement in horizontal or vertical position: upstream 10 x pipe diameter and downstream 5 x pipe diameter. Considering space limitations: minimum requirement, upstream 3 x pipe diameter and downstream 0 x pipe diameter;
- The device is designed for use under the specified conditions. Improper use risks the possibility of damage. Failure to comply with the specified parameters will void the warranty;
- For installations in rooms with flammable and/or explosive substances, applicable protective measures must be followed;
- Work gloves must be worn as sharp edges could result in injury;
- Do not install the device in places where it is exposed to toxic, irritating or corrosive gases as well as liquids and dust;
- Device is not to be installed in hazardous locations;
- Installation and removal of the device to be performed by qualified personnel only;
- Required lightning protection measures must be taken into account;
- Use shielded twisted pair wire for communication, diameter not to be less than 0.75 mm².
- In order to avoid signal interference, it is prohibited to install signal lines and power lines in the same slot.

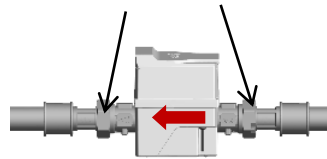
3.3 Installation Steps

- Cut the pipe to the appropriate size to fit the meter with the NPT tail-end connectors;
- Connect the meter tail-end connector to the pipe;
- Align the instrument with the connection accessories; placing the gaskets between the instrument and the meter tail-ends as shown in the figure below:

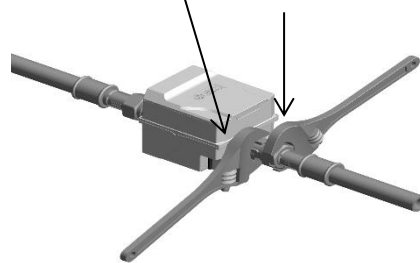
1. Ensure the gaskets are placed correctly between the meter and the tail-ends



2. Tighten both ends to ensure proper gasket compression.

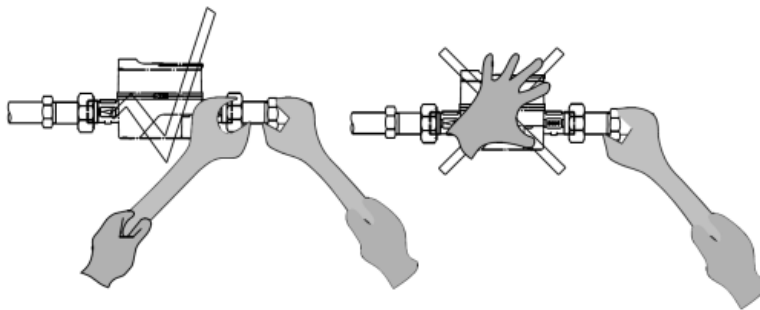


3. Fasten the connections with an adjustable wrench.
DO NOT OVER TORQUE

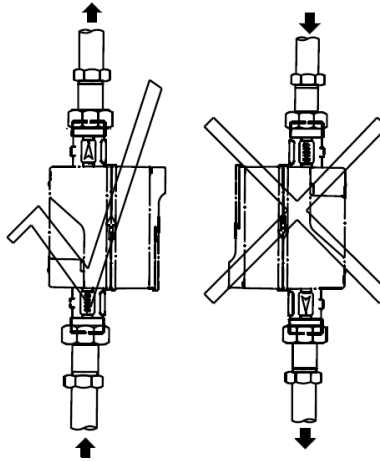


3.4 Common Installation Errors

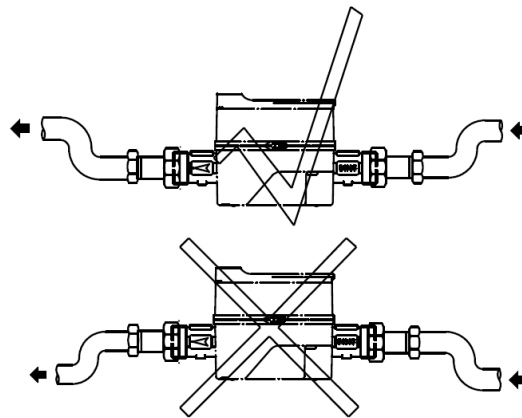
- When installing, use two wrenches to tighten the connection. Do not hold the meter body to tighten the connections as it may cause damage.



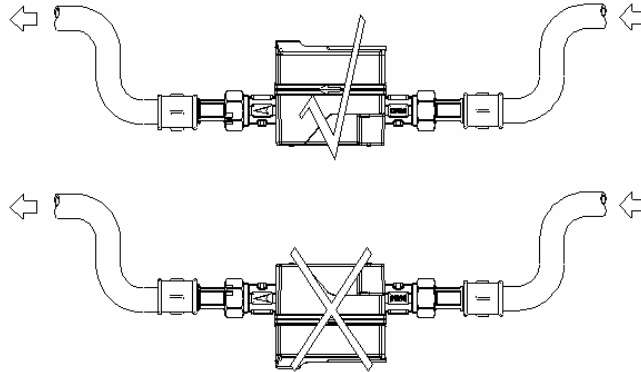
- For vertical installation, water should flow from bottom to top as to not impact the measurement accuracy.



- For "U" type installation, the water meter should be in the lowest position to avoid air gathering in the pipe, causing meter inaccuracy.



- When the water meter is installed horizontally, keep the meter face up for improved battery performance.



TERMS AND CONDITIONS OF SALE

Section 1 - Contract Terms

Intellimeter's quotes, sales orders and drawings are prepared based on the information and specifications provided by the client. The buyer is responsible to make sure that it corresponds to the requirements of the project. Any changes or additions beyond the scope of this quote will result in additional or increased charges. All contracts for the sale of goods and services concluded between Intellimeter Canada Inc. (hereinafter called "ICI") and the purchaser, (hereinafter called the "Purchaser") are subject to the following terms and conditions. Any variation from the terms and conditions herein contained will require written consent of ICI signed by its duly authorized representative. Purchase orders received from the Purchaser for ICI products will be subject to the standard ICI terms and conditions. ICI will not be bound by any terms and conditions or pricing stated on the purchase order, unless agreed to in writing by ICI.

Section 2 - Prices, Shipping, Taxes, and Tariffs

Unless otherwise stated, prices quoted are valid for acceptance for a period of 30 days from issuance of quote. Should the decision to accept our offer be delayed to a later date, we would be pleased to either confirm our offer or re-bid. Unless otherwise stated, prices do not include the arrangement and cost of a utility shutdown which must be arranged, by the Purchaser, directly with the Utility Provider. Unless otherwise stated, prices do not include any external wiring or any cabling from the equipment. Unless otherwise stated, prices are EXW ICI. Shipping charges are extra and quoted prices do not include taxes. Prices quoted are based on foreign exchange rates, customs tariffs and other direct taxes in effect at the date of quotation. Any changes in foreign exchange rates, sales taxes, customs tariffs or other taxes shall be the responsibility of the Purchaser in Canadian funds, unless otherwise stated.

Section 3 - Terms of Payment

Terms are net 30 days from date of invoice subject to prior credit approval. Late payments will be subject to interest charges at the rate of twenty-four percent (24%) per annum (2% per month), calculated daily. Invoices for pro-rata shipments become due Net 30 days from the date of shipment. If at Purchasers' request, shipments are delayed, payments for the product will be invoiced to the Purchaser to the extent of completion, as a percentage of the total contract price. Equipment held for the Purchaser shall be at the risk and expense of the Purchaser.

Section 4 - Delivery

Delivery dates quoted are subject to confirmation at the time of contract awarding. All confirmed dates are based on the prompt receipt by ICI of all necessary information enabling work to proceed without interruption. When the contract is for the supply and commission of equipment, a delivery date will be established at the time of contract awarding. Should the installation of the equipment be delayed beyond that date, ICI reserves the right to invoice for the supply portion of the contract and ship or place the material into storage at the Purchaser's option and expense.

Section 5 - Force Majeure

ICI will not be liable for any non-performance or delay of a contract if it is due to any cause beyond the reasonable control of ICI and/or for which ICI could not reasonably foresee or provide against and which prevents ICI from carrying out the terms of the contract. This includes, but is not limited to the following: war, revolution, insurrection or hostilities (whether declared or not), riot, civil commotion or uprising, flood, earthquake, tempest, hurricane, lightning or other natural disasters, fire or explosion, strike, lockout or other industrial disturbance (whether at ICI or one of its suppliers), sabotage, accident, embargo, car shortage, wrecks or delays in transportation, non-delivery of materials, or order or action of government authority. Any delay resulting from such cause shall extend the date of delivery accordingly. ICI reserves the right to cancel the contract if in its opinion such circumstances threaten or cause extended delay in the performance thereof.

Section 6 - Cancellation

Purchase orders placed by the Purchaser and accepted by ICI may be cancelled only with the written consent of ICI. A cancellation charge may be payable by the Purchaser to cover costs, including design and engineering, drawing preparation, materials purchased and production costs incurred to a maximum of 100% of the selling price.

Section 7 - Liability

ICI shall not be liable for any damages arising from the use of the goods supplied here under, or for any special, indirect or consequential damages arising from delays, however caused, through non-delivery, or through defects in materials or workmanship or from any other cause whatsoever. No claim of any kind whether as to a product delivery or for non-delivery of a product, shall be greater in amount than the purchase price of the product in respect of which the claim is made.

PARTS OR SERVICES, SALE OF OR OTHERWISE, WHETHER BASED IN CONTRACT, WARRANTY, TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, OR ANY OTHER LEGAL OR EQUITABLE THEORY.

ICI shall pass on the benefit of any warranties from suppliers of materials, software, and service used in supplied systems. The Purchaser acknowledges that any attempt to repair, service, or tamper with products supplied by ICI, by other than ICI or its authorized service provider will invalidate the warranty.

Section 8 - Warranty

This Limited Warranty is effective only for a period of (12 months from commissioning or 18 months from delivery, whichever occurs first; when stored and/or installed in accordance with product instructions by qualified personnel. This limited warranty will apply when product is used and maintained in accordance with Intellimeter Canada Inc. (hereafter referred to as ICI) guidelines which include, but are not limited to, the information contained in ICI Terms and Conditions for Sale of Products and/or Services, Specifications and Installation Instructions. ICI must be notified of the defect within thirty (30) days after the defect becomes apparent or known. Buyer's remedies shall be limited to replacement only of the product which failed to conform to ICI's express warranty set forth above. Replacement product shall be identical to original product supplied. Buyer shall be responsible for all freight costs and shall bear all risk of loss or damage to returned goods while in transit. This Limited Warranty does not cover installation, removal, reinstallation, or labor costs, and excludes normal wear and tear. Buyer shall provide labor for the removal of the defective component or item and installation of its replacement at no charge to ICI. This Limited Warranty does not cover any product if: (i) a product is altered or modified from its original manufactured condition, (ii) any repairs, alterations or other work has been performed by Buyer or others on such item, other than work performed with ICI's authorization and according to its approved procedures; (iii) the alleged defect is a result of abuse, misuse, improper maintenance, improper installation, accident or the negligence of any party; (iv) damaged as a result of events beyond ICI's control or other force majeure events or (v) used in conjunction with equipment, components, accessories, parts or materials not supplied or approved by ICI. This Limited Warranty is limited to the obligation to replace the manufactured product. This is the sole and exclusive remedy for any breach of warranty. **IN NO EVENT SHALL INTELLIMETER BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES (INCLUDING ANY DAMAGE FOR LOST PROFITS) ARISING OUT OF OR IN CONNECTION WITH THE FURNISHING OF PRODUCTS, PARTS OR SERVICES, OR THE PERFORMANCE, USE OF, OR INABILITY TO USE ANY PRODUCTS,**

Section 9 - Commissioning

Unless otherwise stated, commissioning, if quoted, is limited to the verification of the operation of the metering system and to one site-visit not exceeding four (4) hours) of service time. It requires the presence of the Electrical or Mechanical contractor during commissioning and that the system being metered is fully operational. Additional visits will be charged at the standard rates effective at the date the commissioning service is performed.

Section 10 - Loss or Damage of Goods in Transit

Delivery of goods by ICI will be deemed to be made to the Purchaser upon obtaining a signed receipt from the carrier showing receipt of the goods in good order. Title to the goods will remain with ICI until payment in full is made by the Purchaser and all risk for safekeeping and condition of the goods will become the responsibility of the Purchaser upon deemed delivered. ICI is not liable for any loss or damage, delay or non-delivery. ICI's responsibility ceases upon receipt of acknowledgment in writing from the carrier of shipments in good order.

Section 11 - Safety

Site and working conditions must meet conditions as laid out in the applicable Health and Safety Act and Regulations. No ICI employee is required to work on equipment which has not, in his or her sole opinion, been placed in an electrically safe state for the work to be performed. It is at the sole discretion of ICI to accept the safety procedures, working conditions and required number of support staff to commence with the work. The purchaser shall supply to ICI at the request of ICI and at no cost to ICI a qualified tradesman when working on equipment.

Section 12 - Governing Law

The terms, provisions and conditions hereof and all matters arising out of the execution, construction, interpretation or breach thereof, are to be governed by the laws of Ontario, Canada. ICI agrees to bring any action claims or legal proceedings in any way pertaining to this order, or the execution, construction, interpretation or breach thereof in the courts of the jurisdiction specified above and in no other court or tribunal whatsoever.

We reserve the right to correct clerical errors.